

**National Park Service**

Juan Bautista de Anza

National Historic Trail
AZ, CA

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Climate Change

Climate Change on the Juan Bautista de Anza Trail

Climate change is reshaping the world as we know it. It has serious consequences for people and ecosystems everywhere—including along the Juan Bautista de Anza Trail.

The story of climate change isn't over, and the future is in our hands. The story of the Anza expedition has a lot to teach us about how climate change is shaping the landscape, and how we can respond. People have risen to big challenges before. Now, it's time to do it again.

Learning from the Anza Trail

Have you ever overcome a difficult challenge, even though it felt overwhelming?

The Anza Trail follows the route of a Spanish colonial expedition from October 1775 to March 1776. Approximately 240 family members, 1,000 pack animals, three Spanish priests, Indigenous guides and translators, and Spanish military colonel Juan Bautista de Anza made the trek on foot from Sonora, Mexico to San Francisco in less than a year.

They encountered extreme hardships, including a wide river crossing, a winter storm and earthquake, many illnesses, and periods of dehydration. Anza and Father Font, a Catholic priest, kept detailed journals of their travel, often referencing hardships and describing the state of the land and its resources. As they traveled, the expedition party worked together to support each other and overcome challenges. They received help from Indigenous communities along the way with river crossings, finding water sources, land guidance, and language translation.

Today, we face a different challenge: climate change. Like the expedition party, we'll need to approach hardship with resilience. We'll need to keep careful records of what we experience and the shifts in the world around us. And we'll need to work together, each playing a role according to our strengths, in order to work towards a brighter future for all.

Climate Change and Colonization

Despite its name, the Juan Bautista de Anza National Historic Trail wasn't discovered by Anza. Indigenous Peoples have been

using these trails since long before the Anza expedition. Indigenous communities have cared for the land since time immemorial, and are still connected to it. But the Anza expedition was tied to Spanish colonization, which dealt a violent and devastating blow to Tribal worlds as they existed.

As Spanish colonists spread, they brought new agricultural systems that were often practiced unsustainably for existing conditions. In some cases, overgrazing led to erosion and the loss of native grasslands, while forests were cleared for building materials. The colonists, in importing their way of life, also suppressed Indigenous cultures and lifeways.

These actions have lasting impacts today, including in the context of climate change. Both grasslands and forests store a lot of carbon. When those healthy ecosystems are changed or destroyed, that carbon is released into the atmosphere, where it contributes to climate change. The Indigenous stewardship practices that colonists worked to prevent are also highly effective keeping ecosystems healthy around the world. Western studies have confirmed that areas managed by Indigenous Peoples are often more biodiverse¹ and store more carbon² than other lands. By preventing these practices, colonization harmed the land and climate.

As we respond to climate change, we can learn from history. It's crucial for climate action to include everyone. That's especially true for those with traditional knowledge like Indigenous stewards, so climate action can honor knowledge gained over generations of interactions with the land. The story of the Anza expedition also highlights the need for justice in our response. How can we respond to climate change in a just way, and move towards a better future?

Climate Change on the Anza Trail: How is climate change reshaping the landscape?

Drought along the Santa Cruz River

On their way north towards Tubac, the expedition stopped in an area they called Las Lagunas, in modern-day Nogales, Arizona on October 14th, 1775.

“All these lands are abundant in pasturage, and in them, the San Ygnacio [Santa Cruz] River rises.” (Diary of Father Font, October 14th, 1775)

The expedition relied upon the Santa Cruz River as a natural water source to survive. Today, the Santa Cruz River water levels are decreasing due to increased overgrazing, development, and intermittent drought. Reduced river levels have threatened the aquatic life and riparian plants that are reliant on the river for their survival.



Santa Cruz River in 2021

NPS photo

Urbanization along the Colorado River

In November of 1775, The Anza expedition reached present-day Yuma, Arizona, where the Colorado and Gila Rivers converge. The colonists needed to cross the river to make it to San Francisco, but in 1775, the water level was too high to cross safely. The only way they could cross the river was on horseback with the help of the Quechan tribe who knew the best and widest crossings.

“The width of the river where we crossed it I judged to be some three or four hundred varas [0.15 to 0.2 miles], and this is at the time when it is lowest, for when it is in flood it is leagues in width and extent through that land that is so level.”

(Diary of Father Font on November 30th, 1775)

Increased agricultural activity and the canaling of water to southern California and metropolitan Phoenix have dropped the water levels of the Colorado River so much that the river no longer reaches its destination at the Gulf of California. It is a concern for future water needs in the American Southwest. It's much easier to cross the Colorado River today, even on foot.



The Colorado River
NPS photo

Sea levels in San Francisco

When Font and Anza arrived in San Francisco Bay, Anza erected a cross where the Golden Gate Bridge sits today.

“The commander decided to erect the holy cross, which I blessed after Mass, on the extreme point of the white cliff at the inner terminus of the mouth of the port.” (Diary of Pedro Font, March 28th, 1775)

As global temperatures rise and ice caps melt, sea levels are rising all around the world. By 2100, it is projected that the sea could rise by an additional 6.53 feet, increasing the risks of flooding and erosion. This threatens natural, cultural, and recreational resources in the coastal area. But if we reduce our greenhouse gas emissions, we could limit sea level rise in San Francisco to 1.57 feet by 2100³.



The San Francisco Bay
Kirke Wrench

Where do we go from here?

Comparing diary entries from the Anza expedition to the landscape today confirms what science has already told us: climate change is here, and it's impacting places we know and love. However, the expedition's history is a great example of overcoming extreme difficulty by resiliency. It can feel overwhelming, but remember that to accomplish this goal, we can lean on others to support and help us on this journey.

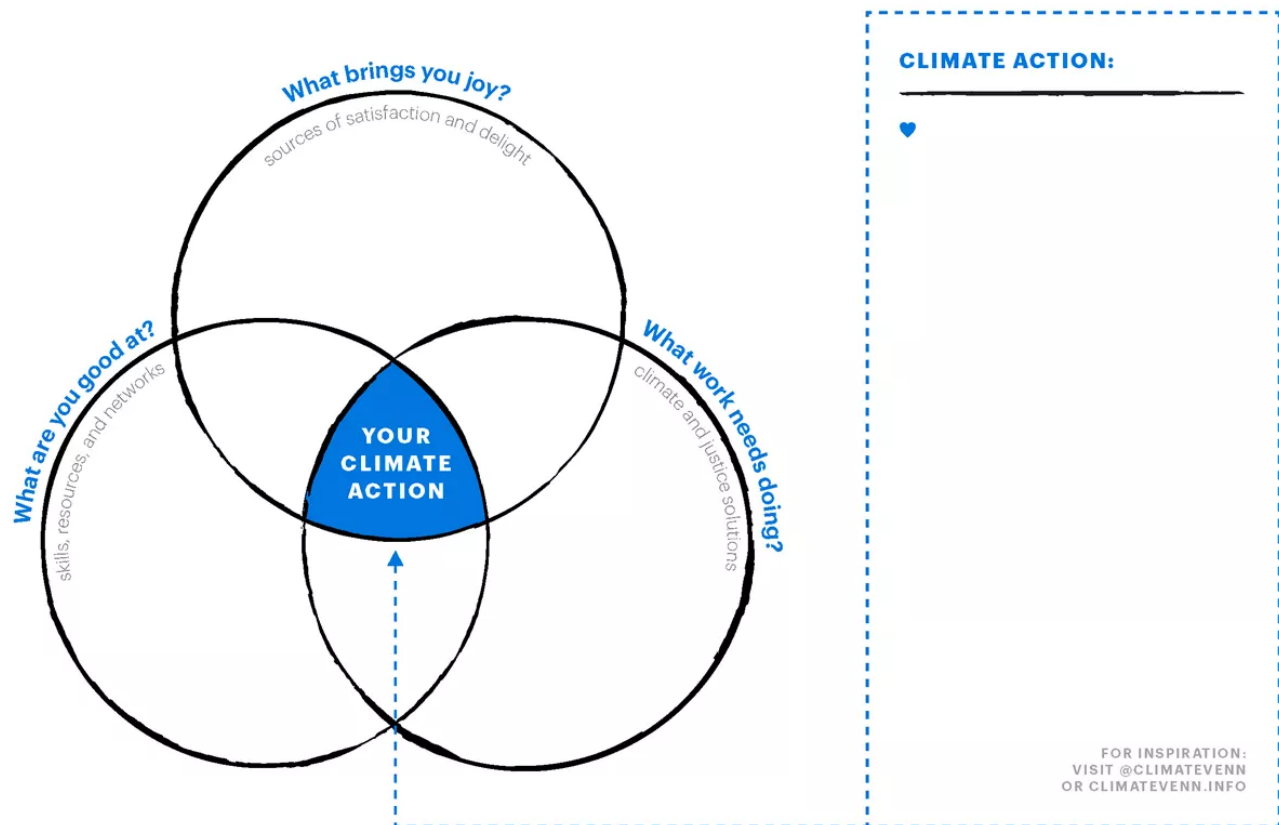
When is a time you've accomplished a challenging goal? Did you do it on your own, or with the help of others? What did that feel like?

Stories from the past show us that people have impressive determination when it comes to providing a better future for their loved ones. The expedition members were willing to go through extreme hardship to make that possible. We, too, can use the same determination, resiliency, and teamwork to combat the impacts of climate change for future generations.

Doing Your Part

Like all great challenges, the first step towards fighting climate change is finding your own unique way to contribute to the solution. While they were tackling a different set of issues, the Anza expedition reminds us of the depth of human courage, and the ways in which we can rise to meet the challenges of our time.

In the same way, we have to respond to climate change together. Everyone has a role to play, and there's no one size fits all solution to the challenge that we face.



Dr. Ayana Elizabeth Johnson

Consider this Venn Diagram, developed by Dr. Ayana Elizabeth Johnson. It asks you to consider three questions:

- **What work needs doing?** What are meaningful ways to take action on climate change? To think about this, you can explore climate solutions tools like the [UN's Sectoral Solution to Climate Change](https://www.unep.org/interactive/sectoral-solution-climate-change/). (<https://www.unep.org/interactive/sectoral-solution-climate-change/>)
- **What are you good at?** What tools and skills do you have? What networks could you reach out to?
- **What brings you joy?** Climate action is a marathon, not a sprint. Doing something that makes you happy and motivated will help you keep it up for the long haul.

At the intersection of these three circles is your climate superpower—the best way for you, specifically, to fight climate change and work towards a brighter future. It will take all of us working together to confront the scale of this challenge. If we all apply our climate superpowers, we can take big steps towards making it happen.

References

1. Richard Schuster, Ryan R. Germain, Joseph R. Bennett, Nicholas J. Reo, and Peter Arcese. 2019. "Vertebrate biodiversity on indigenous-managed lands in Australia, Brazil, and Canada equals that in protected places." Environmental Science & Policy 1-6. <https://doi.org/10.1016/j.envsci.2019.07.002> (<https://doi.org/10.1016/j.envsci.2019.07.002>)
2. Wayne S. Walker, Seth R. Gorelik, Alessandro Baccini, Jose Luis Aragon-Osejo, Carmen Josse, Chris Meyer, Marcia N. Macedo, Cicero Augusto, Sandar Rios, Tuntiak Katan, et al. 2020. "The role of forest conversion, degradation, and disturbance in the carbon dynamics of Amazon indigenous territories and protected areas." PNAS 117 (6), 3015-3025. <https://doi.org/10.1073/pnas.1913321117> (<https://doi.org/10.1073/pnas.1913321117>)
3. NOAA Office for Coastal Management. Digital Coast Sea Level Rise Viewer. <https://coast.noaa.gov/digitalcoast/tools/slr.html> (<https://coast.noaa.gov/digitalcoast/tools/slr.html>). Accessed 2024.

These numbers came the San Francisco, California local scenario projections for the year 2100, under the "Intermediate Low" and "High" sea level rise scenarios.

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More about Climate Change along the Anza Trail

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Understanding the Space Between Land and Sea Through the Eyes of Snowy Plovers

(https://www.nps.gov/articles/000/sfanblog_through-the-eyes-of-snowy-plovers.htm)

Narrow By Location: 0

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Per Page: 10

Sort: Recently Updated

Locations: Golden Gate National Recreation Area, Point Reyes National Seashore

Offices: San Francisco Bay Area Inventory & Monitoring Network



(https://www.nps.gov/articles/000/sfanblog_through-the-eyes-of-snowy-plovers.htm)

Limantour Beach is wide. Bookended by ocean on one side and grassy dunes on the other, its sandy expanse provides a habitat for many organisms that rely on the rich ecosystem between land and sea. The western snowy plover, a small brown and white shorebird, is one species that finds refuge in the sand. Over time, human activity and development have degraded many beaches like Limantour, and biologists have seen those impacts through the eyes of the

snowy plovers.

How Parks' Popular Webpages Can Benefit the Climate Conversation

(https://www.nps.gov/articles/000/psv39n1_how-parks-popular-webpages-can-benefit-the-climate-conversation.htm)

Locations: Boston African American National Historic Site, Capitol Reef National Park, Glacier National Park, Golden Gate National Recreation Area, Lewis & Clark National Historic Trail, **more »**

Offices: Climate Change Response Program



(https://www.nps.gov/articles/000/psv39n1_how-parks-popular-webpages-can-benefit-the-climate-conversation.htm)

Many Americans are reluctant to talk with one another about climate change. This may have a chilling effect on addressing its impacts in and outside national parks. Online information and storytelling could encourage meaningful dialogue.

Innovative System Measures Fog That Beloved Plants Need to Thrive

(https://www.nps.gov/articles/000/psv39n1_innovative-system-measures-fog-that-beloved-plants-need-to-thrive.htm)

Locations: Cabrillo National Monument, Channel Islands National Park



(https://www.nps.gov/articles/000/psv39n1_innovative-system-measures-fog-that-beloved-plants-need-to-thrive.htm)

Fog is a critical but mysterious water source for native plants during hot, dry summers at Cabrillo National Monument. Researchers used new technology to uncover the park's fog patterns, showing the best places to restore damaged habitat.

Changing Patterns of Water Availability May Change Vegetation Composition in US National Parks

(https://www.nps.gov/articles/000/ncpn_water_availability.htm)

Locations: Acadia National Park, Agate Fossil Beds National Monument, Alibates Flint Quarries National Monument, Amistad National Recreation Area, Antietam National Battlefield, **more »**

Offices: Appalachian Highlands Inventory & Monitoring Network, Chihuahuan Desert Inventory & Monitoring Network, Cumberland Piedmont Inventory & Monitoring Network, Eastern Rivers and Mountains Inventory & Monitoring Network, Great Lakes Inventory & Monitoring Network, **more »**



(https://www.nps.gov/articles/000/ncpn_water_availability.htm)

Across the US, changes in water availability are altering which plants grow where. These changes are evident at a broad scale. But not all areas experience the same climate in the same way, even within the boundaries of a single national park. A new dataset gives park managers a valuable tool for understanding why vegetation has changed and how it might change in the future under different climate-change scenarios.

PINNACLES NATIONAL PARK

Safeguarding National Heritage in the Face of Climate Change at Pinnacles National Park

(<https://www.nps.gov/articles/000/2023-pwr-cultural-resource-awards-blanca-stransky.htm>)

Locations: Pinnacles National Park



(<https://www.nps.gov/articles/000/2023-pwr-cultural-resource-awards-blanca-stransky.htm>)

Blanca A. Stransky was awarded a Regional Cultural Resource Award for skillfully integrating cultural resource concerns into the broader planning efforts at the park. In 2023, she led a whole-park effort to address safety concerns in Bear Gulch, where park housing, offices, and the museum collection are

threatened by wildfire.

Case Study: Hybrid Ferries to Alcatraz

(<https://www.nps.gov/articles/000/alcatraz-hybrid-ferries.htm>)

Locations: Alcatraz Island, Golden Gate National Recreation Area



(<https://www.nps.gov/articles/000/alcatraz-hybrid-ferries.htm>)

How can innovation help us meet our sustainability goals? At Golden Gate National Recreation Area, park staff partner with Alcatraz City Cruises to meet unprecedented problems with unprecedented solutions. They've pushed to be on the cutting edge of sustainable technology by investing in the nation's first hybrid-electric passenger ferries.

SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA**Case Study: Santa Monica Mountains' Net-Zero Intern Center**

(<https://www.nps.gov/articles/000/santa-monica-net-zero-intern-center.htm>)

Locations: Santa Monica Mountains National Recreation Area



(<https://www.nps.gov/articles/000/santa-monica-net-zero-intern-center.htm>)

In 2010, Santa Monica Mountains National Recreation Area made history as they completed work on their new student intern center—the first ever net-zero building in the National Park Service (NPS).

Seabirds from Further South Find Refuge on the Channel Islands

(<https://www.nps.gov/articles/000/seabirds-from-further-south-find-refuge-on-the-channel-islands.htm>)

Locations: Channel Islands National Park

Offices: Southern California Research Learning Center



(<https://www.nps.gov/articles/000/seabirds-from-further-south-find-refuge-on-the-channel-islands.htm>)

When we travel to our national parks it can be easy to see some of our favorite wildlife roaming the landscape. But what we don't see are the species who may not be there yet. As our climate continues to change in ways we have never seen before, protected open spaces are increasingly serving as critical refuge for species needing to find new homes.

Vital Signs & Climate Change: Tracking the Pulse of San Francisco Bay Area National Park Ecosystems into an Uncertain Climate Future

(<https://www.nps.gov/articles/000/vital-signs-and-climate-change.htm>)

Locations: Golden Gate National Recreation Area, John Muir National Historic Site, Muir Woods National Monument, Pinnacles National Park, Point Reyes National Seashore

Offices: San Francisco Bay Area Inventory & Monitoring Network



(<https://www.nps.gov/articles/000/vital-signs-and-climate-change.htm>)

Here, we'll dive into a collection of stories about how six San Francisco Bay Area Network vital signs—indicators of park ecosystem health—are being impacted by climate change: rocky intertidal zones, western snowy plovers, coho salmon, plant communities, landbirds, and pinnipeds (seals). We'll look at how network scientists and partners are learning about each sign, and how this long-term research is essential to structuring life-sustaining conservation

initiatives.

Ramadas of the Southwest

(https://www.nps.gov/articles/000/sodn_ramadas-of-the-southwest.htm)

Locations: Saguaro National Park, Tumacácori National Historical Park

Offices: Sonoran Desert Inventory & Monitoring Network



(https://www.nps.gov/articles/000/sodn_ramadas-of-the-southwest.htm)

How did indigenous peoples of the Sonoran Desert stay cool? What is vernacular architecture and why is it relevant today? This article explores the history of ramada use by the Akimel O'odham and Tohono O'odham, describes the ramada built at the Desert Research Learning Center, and highlights the importance of constructing living spaces in harmony with the natural environment.

Tags: [climate change \(https://www.nps.gov/media/article-search.htm?q=climate change\)](https://www.nps.gov/media/article-search.htm?q=climate%20change)

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